

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>MJL-VB60298</b>	<b>FOR FURTHER ACTION</b> see Form PCT/ISA/220 as well as, where applicable, Item 5 below.	
International application No. <b>PCT/EP2004/006426</b>	International filing date (day/month/year) <b>14/06/2004</b>	(Earliest) Priority Date (day/month/year) <b>16/06/2003</b>
Applicant <b>GLAXOSMITHKLINE BIOLOGICALS S.A.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 8 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

- a. With regard to the **language**, the International search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.
2. ☒ **Certain claims were found unsearchable** (See Box II).
3. ☐ **Unity of invention is lacking** (see Box III).

## 4. With regard to the title,

- ☐ the text is approved as submitted by the applicant.
- ☒ the text has been established by this Authority to read as follows:

POLYANIONIC POLYMER ADJUVANTS FOR HAEMOPHILUS INFLUENZA B SACCHARIDE VACCINES

## 5. With regard to the abstract,

- ☒ the text is approved as submitted by the applicant.
- ☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

## 6. With regards to the drawings,

- a. the figure of the **drawings** to be published with the abstract is Figure No. \_\_\_\_\_
- ☐ as suggested by the applicant.
- ☐ as selected by this Authority, because the applicant failed to suggest a figure.
- ☐ as selected by this Authority, because this figure better characterizes the invention.
- b. ☒ none of the figures is to be published with the abstract.

# INTERNATIONAL SEARCH REPORT

International Application No.  
PCT/EP2004/006426

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 A61K39/102 A61K39/385 A61K39/39 A61P31/04 A61K9/51

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

BIOSIS, EPO-Internal, WPI Data, PAJ

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GUPTA R K ET AL: "BIODEGRADABLE POLYMER MICROSPHERES AS VACCINE ADJUVANTS AND DELIVERY SYSTEMS" DEVELOPMENTS IN BIOLOGICAL STANDARDIZATION, KARGER, BASEL, CH, vol. 92, 1998, pages 63-78, XP001015412 ISSN: 0301-5149	1-4, 10, 11, 15-19, 23, 26, 27, 29, 30, 34-36, 39-41, 43, 46, 48-50, 58, 59
Y	abstract  table 1	1-36, 39-59

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

**\* Special categories of cited documents:**

\*A\* document defining the general state of the art which is not considered to be of particular relevance

\*E\* earlier document but published on or after the international filing date

\*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

\*O\* document referring to an oral disclosure, use, exhibition or other means

\*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*A\* document member of the same patent family

Date of the actual completion of the international search

24 November 2004

Date of mailing of the international search report

17/12/2004

Name and mailing address of the ISA

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Lechner, O

## IN TERNATIONAL SEARCH REPORT

International Application No  
PCT/EP2004/006426

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	BOEHM GÉRARD ET AL: "On technological and immunological benefits of multivalent single-injection microsphere vaccines." PHARMACEUTICAL RESEARCH. SEP 2002, vol. 19, no. 9, September 2002 (2002-09), pages 1330-1336, XP002306393 ISSN: 0724-8741	1-4,10, 11,14, 16-19, 23,24, 26,27, 30, 33-36, 49,50, 58,59, 1-36, 39-59
Y	abstract	
Y	----- RAGHUVANSHI RAJEEV S ET AL: "Improved immune response from biodegradable polymer particles entrapping tetanus toxoid by use of different immunization protocol and adjuvants." INTERNATIONAL JOURNAL OF PHARMACEUTICS. 1 OCT 2002, vol. 245, no. 1-2, 1 October 2002 (2002-10-01), pages 109-121, XP002306394 ISSN: 0378-5173 the whole document	1-36, 39-59
Y	----- WO 98/17310 A (DIMMINACO AG S A LTD ; HILGERS LUUK (NL)) 30 April 1998 (1998-04-30) abstract claims 1-28	1-36, 39-59
Y	----- PEYRE MARISA ET AL: "An experimental divalent vaccine based on biodegradable microspheres induces protective immunity against tetanus and diphtheria." JOURNAL OF PHARMACEUTICAL SCIENCES, vol. 92, no. 5, May 2003 (2003-05), pages 957-966, XP002306395 ISSN: 0022-3549 abstract	1-36, 39-59
Y	----- WO 02/00249 A (DESMONS PIERRE MICHEL ; LEMOINE DOMINIQUE (BE); SMITHKLINE BEECHAM BIO) 3 January 2002 (2002-01-03) abstract claims 1-29 ----- -/-	1-36, 39-59

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GUPTA RAJESH K ET AL: "Evaluation of a guinea pig model to assess interference in the immunogenicity of different components of a combination vaccine comprising diphtheria, tetanus and acellular pertussis (DTaP) vaccine and Haemophilus influenzae type b capsular polysaccharide conjugate vaccine" BIOLOGICALS, vol. 27, no. 2, June 1999 (1999-06), pages 167-176, XP002306396 ISSN: 1045-1056 abstract	1-36, 39-59
A	RICHARD A ET AL: "PRODUCTION AND MASS TRANSFER CHARACTERISTICS OF NON-NEWTONIAN BIOPOLYMERS FOR BIOMEDICAL APPLICATIONS" CRC CRITICAL REVIEWS IN BIOTECHNOLOGY, CRC PRESS, BOCA RATON, FL, US, vol. 22, no. 4, 2002, pages 355-374, XP009027022 ISSN: 0738-8551 paragraph '00B1! table 1	1-36, 39-59
A	NICOL F ET AL: "Poly-L-glutamate, an anionic polymer, enhances transgene expression for plasmids delivered by intramuscular injection with in vivo electroporation" GENE THERAPY, vol. 9, no. 20, October 2002 (2002-10), pages 1351-1358, XP002306397 ISSN: 0969-7128 abstract	1-36, 39-59
A	MILAS LUKA ET AL: "Poly(L-glutamic acid)-paclitaxel conjugate is a potent enhancer of tumor radiocurability." INTERNATIONAL JOURNAL OF RADIATION ONCOLOGY BIOLOGY PHYSICS, vol. 55, no. 3, 1 March 2003 (2003-03-01), pages 707-712, XP002306398 ISSN: 0360-3016 abstract	1-36, 39-59

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>YANG ZHIQIANG ET AL: "Poly(glutamic acid) poly(ethylene glycol) hydrogels prepared by photoinduced polymerization: Synthesis, characterization, and preliminary release studies of protein drugs" JOURNAL OF BIOMEDICAL MATERIALS RESEARCH, vol. 62, no. 1, October 2002 (2002-10), pages 14-21, XP002306399 ISSN: 0021-9304 abstract paragraph 'INTRODUCTION!</p>	1-36, 39-59
A	<p>DIWAN MANISH ET AL: "Enhancement of immune responses by co-delivery of a CpG oligodeoxynucleotide and tetanus toxoid in biodegradable nanospheres." JOURNAL OF CONTROLLED RELEASE, vol. 85, no. 1-3, 13 December 2002 (2002-12-13), pages 247-262, XP004397783 ISSN: 0168-3659 abstract</p>	1-36, 39-59
A	<p>SÁNCHEZ A ET AL: "Formulation strategies for the stabilization of tetanus toxoid in poly(lactide-co-glycolide) microspheres." INTERNATIONAL JOURNAL OF PHARMACEUTICS. 20 AUG 1999, vol. 185, no. 2, 20 August 1999 (1999-08-20), pages 255-266, XP002306400 ISSN: 0378-5173 abstract</p>	1-36, 39-59
A	<p>ESPARZA I ET AL: "PARAMETERS AFFECTING THE IMMUNOGENICITY OF MICROENCAPSULATED TETANUS TOXOID" VACCINE, BUTTERWORTH SCIENTIFIC. GUILDFORD, GB, vol. 10, no. 10, January 1992 (1992-01), pages 714-719, XP000537444 ISSN: 0264-410X abstract page 718, left-hand column, paragraph 3 -right-hand column, paragraph 1</p>	1-36, 39-59
A	<p>GLAXOSMITHKLINE NZ LTD: "Datasheet - Hiberix" NEW ZEALAND MEDICINES AND MEDICAL DEVICES SAFETY AUTHORITY, 'Online! 2002, XP002306401 Retrieved from the Internet: &lt;URL:www.medsafe.govt.nz/profs/Datasheet/h/Hiberixinj.htm&gt; 'retrieved on 2004-11-18! abstract</p>	1-59

# IN INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP2004/006426

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>JIANG WENLEI ET AL: "Stabilization of a model formalinized protein antigen encapsulated in poly(lactide-co-glycolide)-based microspheres"</p> <p>JOURNAL OF PHARMACEUTICAL SCIENCES, vol. 90, no. 10, October 2001 (2001-10), pages 1558-1569, XP002306630</p> <p>ISSN: 0022-3549</p> <p>abstract</p> <p>-----</p>	1-59

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP2004/006426

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:  
Although claim 35, 49, 50 is directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.  
☐ No protest accompanied the payment of additional search fees.

# INT 'NATIONAL SEARCH REPORT

information on patent family members

national Application No

PCT/EP2004/006426

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9817310	A	, 30-04-1998	AU 717349 B2 23-03-2000
			AU 5313398 A 15-05-1998
			BR 9712436 A 24-10-2000
			CA 2269780 A1 30-04-1998
			WO 9817310 A2 30-04-1998
			EP 0934077 A2 11-08-1999
			JP 2001507336 T 05-06-2001
			US 2003021793 A1 30-01-2003
WO 0200249	A	03-01-2002	AU 8189501 A 08-01-2002
			BG 107422 A 30-09-2003
			BR 0112057 A 17-06-2003
			CA 2412497 A1 03-01-2002
			CN 1449293 T 15-10-2003
			CZ 20024224 A3 14-05-2003
			WO 0200249 A2 03-01-2002
			EP 1296715 A2 02-04-2003
			HU 0301413 A2 28-08-2003
			JP 2004501873 T 22-01-2004
			MA 25824 A1 01-07-2003
			NO 20026175 A 26-02-2003
			PL 360265 A1 06-09-2004
			SK 18432002 A3 05-08-2003
			US 2003180316 A1 25-09-2003
			ZA 200300755 A 28-04-2004
			CA 2442865 A1 17-10-2002
			WO 02080965 A2 17-10-2002
			EP 1390066 A2 25-02-2004
			HU 0303996 A2 01-03-2004
			NO 20034410 A 25-11-2003
			US 2004202668 A1 14-10-2004